

# 21st Century Digital Instructional Model: Where Learning Clicks

Melissa Roberts Becker  
Tarleton State University  
USA  
becker@tarleton.edu

Susan Erwin, Pam Winn and Credence Baker  
Tarleton State University  
USA  
erwin@tarleton.edu  
winn@tarleton.edu  
cbaker@tarleton.edu

**Abstract:** This paper outlines a 21st Century instructional model which includes effective teaching and learning strategies for secondary school students. The technological limitations of many classroom teachers are addressed. Specifically, challenges faced by teachers as they attempt to integrate digital tools are investigated. The literature review closely examines the need for change in the instructional practices of traditional classrooms. The paper provides a theoretical perspective for effectively teaching secondary students as their unique learning characteristics are explored. The proposed instructional model addresses the needs of digital learners as they meet the expectations of the United States 21st Century society. Innovative instructional strategies are paired with popular digital tools to maximize the effects of successful teaching and learning in the classroom. Effective application of the proposed 21st Century Digital Instructional Model enables teachers to communicate content while engaging students in the process skills in an effective classroom: Where Learning Clicks.

## Theoretical Perspective

A review of theories related to characteristics of 21st Century learners and digital natives, the 21st Century Skills, and metaphorical adaptation of an established commercial instructional model guided the development of the proposed instructional strategies and application of the 21st Century tools.

## Characteristics of 21<sup>st</sup> Century Learners and Digital Natives

Unlike previous generations, students today arrive at school with *digital brains* (Sprenger, 2009). Even preliterate, preschool-aged children engage in digital games and online communication, while slightly older children participate in texting, email, twitter, Skype, often multi-tasking several technology devices at one time. Experts in skimming and scanning information, Sprenger (2009) suggested the digital brains of today's students are *hyperconnected*. Effectively teaching *hyperconnected* students requires changed instructional practices.

As a group, digital natives have experienced different ways of navigating the world since birth. As a result, many share common characteristics. More than previous generations, they are consumer and entertainment oriented. Intellectually disengaged in non-digital classes, digital natives have difficulty with relationships (skepticism, cynicism, civility) and boundaries (self interested, privacy issues). While appearing tolerant, adaptable, and pragmatic they are apt to pursue excellence through entitlement, negotiation, and parent advocates (Taylor, 2005). Unlike previous generations, it is difficult to specify exact birth year ranges for digital natives, because socioeconomics and geographic area might have affected access to technology.

The *culture* of the digital world comprises both immigrants and natives (Prensky, 2001). Digital immigrants learned to navigate the world without digital tools and have since adopted digital tools. In contrast, digital natives

have always learned in digital spaces. Today, most classroom teachers are digital immigrants, while their students are digital natives. Prensky (2001) acknowledged that this difference creates a cultural clash during classroom instruction. Technology applications are typically the first choice of digital natives who appear to operate effortlessly in digital space, since digital is their *native language*. Conversely, digital immigrants must *substitute* their previous tools with digital tools; translating experiences from non-digital to digital can be overwhelming. One result is digital immigrants feel more comfortable teaching in their first language (non-digital) to students who prefer learning in their first language (digital). Hence, instruction and learning are frustrating and less effective for both groups. Compounding this friction is a common reluctance by digital immigrants to incorporate any instructional technology they have not already mastered. Ironically, Pensky pointed out that because digital natives (students) have grown up translating the digital world to adults (teachers), they *expect* digital immigrants to be less proficient.

## 21st Century Skills

Tilling and Fadel (2009) outlined the changing goals for education through the Agrarian Age, Industrial Age, and Knowledge Age. In the Agrarian Age the skills focused on learning the 3R's (reading, writing, and arithmetic) and the skills necessary to grow food for survival. However, in the Knowledge Age (the 21<sup>st</sup> Century) the skills required for existence in the connected world of global markets, knowledge, and tele-linked citizens are much different (Trilling and Fadel, 2009). The 21<sup>st</sup> Century Skills focus on processing and include:

- critical thinking and problem solving,
- communication and collaboration,
- creativity and innovation,
- information literacy, media literacy, and computing information and technology literacy, flexibility and adaptability,
- innovation and self-direction,
- social and cross-cultural innovation,
- productivity and accountability, and
- leadership and responsibility.

Whether students acquire content from traditional sources (lecture, library, text books) or digital sources (YouTube, e-books, Twitter, news blogs), academic rigor requires that they evaluate the quality of the content sources and apply information to solve current, complex problems ranging in scale from individual to global (Brady 2008). A fundamental shift is needed from what *teachers* do with course content to what *students* do with course content.

## Instructional Metaphor

Washor, Mojkowski, and Newsom (2009) evoked the Apple Store experience as a 21<sup>st</sup> Century instructional metaphor for reshaping classroom instruction for digital learners. Apple Store customers range from novice to expert and differ in their reasons for entering an Apple Store: curiosity about product's applied usefulness, direct application instructional needs, and help solving problems. Recognizing that customer learning was critical to business success, effective instruction addresses differences in customer motivation and ability. People are all more likely focus on unique skill *performance* when engaged in problem solving, critical thinking, relevant projects, or complex task activities, especially when coupled with interactive feedback (specific, multiple modalities, timely, and learner controlled) from expert groups (audience). In this respect, 21<sup>st</sup> century learners are not unlike their instructors; In short, providing opportunities for learners to hone skills supported by expert, interactive feedback enhances learning.

## Literature Review

A review of the literature addressing the challenges faced by the United States (U.S.) public instruction justifies the need for change in the instructional practices of traditional classrooms. The unique characteristics of the students in the U.S. public education system deserve heightened attention if educators are to effectively teach the skills needed for success in the 21<sup>st</sup> Century.

## **Global Challenges**

Results of the 2010 Programme for International Student Assessment (PISA) released in December of 2010 rekindled American's frustration with the state of U.S. public school instruction. While Shanghai, Korea, Hong Kong, Singapore, Finland, Canada, Japan and New Zealand ranked in the top seven, the U.S. ranked 25<sup>th</sup> on an internationally standardized assessment of 15-year-old math students (Guria, 2010). PISA rankings take into account differences among culture and economic systems, providing benchmarks that measure existing differences while providing countries flexibility in setting goals that meet their conditions. Among lessons to be learned from these discouraging results, is that America cannot rely on relative economic supremacy to maintain its former public education advantage. As global competition intensifies and productivity patterns change, the U.S. will need creative reform of attitude and strategies to maintain an edge. Furthermore, because countries with limited resources consistently outperformed U.S. students, more money alone is not the solution.

In addition to increasing educational competition, the U.S. faces growing international competition for jobs. Pink (2006) suggested material abundance has shifted social emphasis from survival to a greater emphasis on American's "self" development in terms of beauty, spirituality, emotion. In contrast, Asian countries have focused more directly on economic development. Graduating huge numbers of degreed workers willing to work for less income, Asia has rapidly absorbed outsourced American jobs. Simultaneously, American white-collar jobs are lost through rapid improvements in automation and online technology.

Economic sustainability is reliant upon a competitive work force. American education still remains the best tool for creating future global workers; however, changes in public education are necessary to reflect marketable, international skills. To further complicate the challenge of remaking a relevant educational system, public schools have the challenge of engaging a most "different" type of learner.

## **Generation Y (Millennials)**

While the Baby Boomer Generation spanned 20 years, Generation X spanned 15 years while the Gen Yers may have spanned closer to 10 years. Born between the mid 1980s to the mid 1990s, Generation Y is larger than Baby Boomer Generation and three times the size of Generation X, comprising roughly 26% of the US population. Gen Yers are typically confident, optimistic young people who feel valued and wanted. The most diverse generation in history, one third were born to single, unwed Gen X mothers, while others may have had middle-aged Baby Boomer moms who postponed childbearing to establish a career (Taylor, 2010). Generation Y is also less white and more brown than previous US generations. Gen Y members have come of age in a very child-focused world. Taylor suggests they inherited the can-do attitude of the Greatest Generation, the teamwork ethic of Boomers, and the technological savvy of Generation X. Their preferred learning environment combines teamwork and technology. Gen Y prefer assigned tasks and, when completed, enjoy helping others.

## **Generation Z (iGeneration)**

Generation Z followed fast on the heels of Generation Y and make up 18% of the world population. Born after 1994 and before 2004, Gen Z was born into a world of attainable affluence and a new wave of communication tools. Digital technology from birth, structured childhoods, and gender equality molded this group. Personalized technology (i- music, i-phone, i-computers) differentiates this generation (Rosen, 2010). Very individualistic, they eschew traditional family values and may lack interpersonal skills, preferring digital communication. The Internet and technology provide members of Gen Z with instant action and satisfaction and the expectation of immediate gratification. While they spend less time personally meeting friends and developing relationships, they participate in huge impersonal communities online. Verbal communication and regard for privacy are less valued than in previous generations. They freely express their opinions, and living with others may be considered intrusive. Their survival strategies focus on intelligence and technology more than formal education and work.

Clearly, teaching Generation Y and Z students demands different instructional strategies than those used successfully with previous generations; however, visitors to today's public schools should be surprised how little schools have changed. No matter how unsettling to tradition, 21<sup>st</sup> Century educational expectations can only be met using 21<sup>st</sup> Century instruction.

## **21st Century Expectations: Changing Educational Practices**

Meeting global and generational challenges may appear overwhelming to current classroom teachers; however, teachers already possess the skills required to thrive in the 21<sup>st</sup> century. Reflecting on how they acquired these skills, teachers can develop a platform from which to design more relevant instruction.

Trilling & Fadel (2009) recommend teachers recognize the differences between generations and focus instruction on strengths while ameliorating weaknesses. To do this they recommend teachers respond reflectively to four questions:

1. What will the world be like in twenty years?
2. What skills will students need to be successful in that world?
3. What contributes to powerful personal learning experiences?
4. How can instruction be designed around the answers to questions 1-3?

Skills necessary for success in the 21st century are not unknown to classroom teachers: critical thinking and problem solving; creativity and innovation; collaboration, teamwork, and leadership; cross-cultural understanding; communication, information, and media literacy; computing and information and computing technologies literacy; and career and learning self-reliance (Trilling & Fadel, 2009). It is important to note, however, that this list does not emphasize content mastery. Skills required in the future will focus on processing rather than collecting information. Life in the Information Age means content-delivery is no longer the sole domain of teachers. Because students can access content without instruction, classes should focus on processes that act on content.

## Instructional Strategies Using Process to Teach the Content

Clearly, 21st century skills are process, rather than content, oriented. Information Age students usually are adept at gathering information from multiple media sources; however, they commonly lack practice and experience to successfully use information to navigate life's challenges. Explicit literacy instruction (math, reading, and writing) and opportunities to practice 21st century *processes* can meet secondary student education needs in any content area.

Finally, the Apple Store experience (Washor, Mojkowski, & Newsom, 2009) presented a 21<sup>st</sup> Century instructional metaphor for reshaping classroom instruction for generation Y and Z learners. The Apple Store is customer-centered; customers freely explore, based upon personal interest. The activity is framed (or confined) to the content opportunities within the store. "Geniuses" facilitate individual learning as needed, one-on-one and in small groups. Other metaphorical elements include: serving one customer at a time, risk-free problem solving, relevance, relationships, rigor and authentic assessment. This comparison illustrates many aspects of an ideal 21<sup>st</sup> Century classroom.

Although reflection and metaphor strategies inspire independent instructional redesign, Table 1 clearly aligns instructional practices that support student success (Triling & Fadel, 2009) with technology integration tools. Application of the Digital Instructional Model empowers teachers to effectively communicate literacy instruction as students acquire the 21<sup>st</sup> Century process skills.

Table 1  
21<sup>st</sup> Century Digital Instructional Model

<b>21st Century Skills*</b>	<b>Instructional Practices That Support 21st Century Success</b>	<b>Digital Tools That Support 21st Century Success</b>
<b><i>Critical Thinking and Problem Solving</i></b>	<ul style="list-style-type: none"> <li>• Student directed</li> <li>• Active learners (Student inquiry)</li> <li>• Application focus (scientific application to current global context)</li> <li>• Flexible course delivery, differentiated by student needs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Application of digital images to tell a story or explain lessons learned (Photo Story; Glogster)</li> <li>▪ Presentation applications demonstrate the students' ability to critically think and resolve issues (Prezi; PowerPoint)</li> </ul>
<b><i>Creativity and Innovation</i></b>	<ul style="list-style-type: none"> <li>• Multiple solutions</li> <li>• Choice of learning activity</li> <li>• Choice of learning demonstration</li> <li>• Teacher facilitates and shares learner/expert roles</li> </ul>	<ul style="list-style-type: none"> <li>▪ Videography: the process of capturing moving images on electronic media and the use of video sharing sites (WMV files posted on YouTube)</li> </ul>

<b><i>Collaboration, Teamwork, and Leadership</i></b>	<ul style="list-style-type: none"> <li>• Students work in flexible groups with alternating leadership</li> <li>• Shared responsibility to instructor; individual responsibility to group</li> <li>• Explicit instruction and consistent practice of meaningful citizenship and character development skills</li> <li>• Content, process and role responsibility standards-based assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Web-based product that allows users to collaborate, create, edit, upload, store and share documents with other users (Google Docs)</li> </ul>
<b><i>Cross-Cultural Understanding</i></b>	<ul style="list-style-type: none"> <li>• Students work with people who are different than themselves online, face-to-face and in combination.</li> <li>• Students discern cultural similarities and differences on a global scale.</li> <li>• Explicit instruction and consistent practice of meaningful global citizenship and character development skills</li> </ul>	<ul style="list-style-type: none"> <li>• Simple web pages that teams can edit together and post online for others to view (Wiki)</li> <li>• Digital pen-pals: create working relationships with other students around the world to solve academic and social challenges world-wide (ePals Global Community)</li> </ul>
<b><i>Information and Media Literacy</i></b>	<ul style="list-style-type: none"> <li>• Multiple modes of content acquisition</li> <li>• Multiple content sources</li> <li>• Multiple methods to assess content acquisition</li> <li>• Explicit instruction in how to evaluate sources</li> </ul>	<ul style="list-style-type: none"> <li>• Web Log: type of website maintained by one person with regular entries that serve as a commentary on a topic; available for public viewing (Blogs)</li> </ul>
<b><i>Information and Computing Technologies Literacy</i></b>	<ul style="list-style-type: none"> <li>• Students free to explore/experiment with new and sophisticated technology formats</li> </ul>	<ul style="list-style-type: none"> <li>• Inquiry-based lessons which require students to solve real-world problems with the digital and analog resources available (WebQuest)</li> </ul>
<b><i>Career and Learning Self-Reliance</i></b>	<ul style="list-style-type: none"> <li>• Students learn what they do not know</li> <li>• Learner outcomes clearly articulated by learner and reliant upon learner</li> <li>• Student responsible for learning</li> <li>• Student accountable to an authentic audience</li> </ul>	<ul style="list-style-type: none"> <li>• Follow the most important people in an academic field through a social network</li> <li>• Create their social network and add to academic knowledge (Twitter)</li> </ul>

## Conclusion

Without doubt, public schools remain necessary to society; however, most digital native students come to school intuitively more technologically adept and technically skilled than many digital immigrant teachers. To be effective, educators must continually ask, “What can school teach students that students cannot learn on their own?” In addition to explicit literacy instruction in math, reading, and writing, instructional changes must be implemented to meet 21st century expectations. While teachers have the digital tools to make needed changes in the classroom, immigrating to the digital world is rife with insecurity. By blending the boundary between expert and learner roles, teachers might reinvigorate classroom instruction and challenge digital natives to perform at levels comparable to those of less affluent nations on international tests and in the workforce. In that 21<sup>st</sup> century classroom, learning will click!

## References

- Brady, M. (2008). Cover the material - or teach students to think. *Educational Leadership*, 65(5), 64-67
- Gurría, A. (2010, December 10). *Presentation of the PISA 2010 Results, Washington D.C.*, Retrieved from [http://www.oecd.org/document/7/0,3343,en\\_21571361\\_44315115\\_46635719\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/7/0,3343,en_21571361_44315115_46635719_1_1_1_1,00.html)
- Pink, D. (2006). *A whole new mind: Why right-brainers will rule the future*. New York, NY: Riverhead Books.
- Prensky, M. (2001, October). Digital natives, digital immigrants: Parts 1-2. *On the Horizon*. NCB University Press, 9(1).
- Rosen, L. (2010). *Rewired: Understanding the iGeneration and the way they learn*. NYC: McMillan.
- Sprenger, M. (2006). Focusing the digital brain. *Educational Leadership*, 67(1), 34-39.
- Taylor, M. (2005). Generation NeXt: Today's postmodern student – Meeting, teaching, and serving. Retrieved from [http://www.taylorprograms.org/images/Gen\\_NeXt\\_article\\_HLC\\_05.pdf](http://www.taylorprograms.org/images/Gen_NeXt_article_HLC_05.pdf)
- Taylor, M. (2010). Teaching generation next: A pedagogy for today's learners. Retrieved from <http://www.taylorprograms.com/drtaylorarticles.html>
- Trilling, B., & Fadel, C. (2009). *21<sup>st</sup> Century skills: Learning for life in our times*. San Francisco, CA: Jossey-Bass.
- Washor, E., Mojkowski, C., & Newsom, L. (2009). At the core of the Apple Store: Images of next generation learning. *Phi Delta Kappan*, 91(2), 60-6.